a second displacement part which has a pair of ends and which can expand and contract between the pair thereof, in which one of the pair is supported by the base; and

a resultant part which connects the other of the pair of the first displacement part and the other of the pair of the second displacement part to each other, in which the resultant part has a contact part that contacts a body to be driven by the contact part, wherein

the contact part can elastically deform in a direction in which the body is driven by the contact part, and

material and configuration of the base, of the first displacement part, of the second displacement part, and of the resultant part are selected so that resonant frequency of the resultant part in the direction in which the body is driven is generally equal to resonant frequency of the first displacement part and the second displacement part in a direction perpendicular to the direction in which the body is driven.

4. (Amended) A driving mechanism comprising:

a base;

a first displacement part which has a pair of ends and which can expand and contract between the pair thereof, in which one of the pair is supported by the base;

a second displacement part which has a pair of ends and which can expand and contract between the pair thereof, in which one of the pair is supported by the base; and

a resultant part which connects the other of the pair of the first displacement part and the other of the pair of the second displacement part to each other, in which the resultant part has a contact part that contacts a body to be driven by the contact part,

wherein the contact part can elastically deform in a direction in which the body is driven by the contact part, and

the driving mechanism further comprising a driver which supplies the first displacement part with a first driving signal having a first phase and which supplies the second displacement part with a second signal having a second phase, in which the first phase is in one of a first state and in which the first phase is faster than the second phase by a predetermined phase difference, and a second state in which the first phase is slower than the second phase by a predetermined phase difference.

14. (Amended) An ultrasonic driving mechanism comprising:

an object to be driven;

at least one pair of electrical-mechanical energy transducers which vibrate with predetermined different phrases to cause a resultant elliptical vibration, in which the electrical-mechanical energy transducers are provided generally symmetrically with respect to an axis that is generally perpendicular to a direction in which the object is driven; and

an elastically deformable part which is provided generally symmetrically with respect to the axis, in which the resultant elliptical vibration is transmitted to the object via the elastically deformable part, wherein

the object can be driven forward and backward by the elastically deform, and

material and configuration of the at least one pair of electrical-mechanical energy transducers and of the elastically deformable part are selected so that resonant frequency of the elastically deformable part in the direction in which the object is driven is

generally equal to resonant frequency of the at least one pair of electrical-mechanical energy transducers in a direction perpendicular to the direction in which the object is driven.

Please add new claims 15-22 as follows:

15. (New) The driving mechanism as claimed in claim 4, wherein the first driving signal and the second driving signal have frequencies which belong to a region of ultrasonic.

16. (New) The driving mechanism as claimed in claim 4, wherein

the first displacement part, the second displacement part, the resultant part, and the contact part are provided generally symmetrically with respect to an axis which is generally perpendicular to the direction in which the body is driven, and

the body can be driven forward and backward by the contact part.

17. (New) The driving mechanism as claimed in claim 4, wherein driving force which the contact part exerts upon the body is equal to or smaller than frictional resistance which is gained by multiplying normal resistance which the contact part exerts upon the body, by frictional coefficient between the contact part and the body.

18. (New) A driving mechanism comprising:

a base;

a first displacement part which has a pair of ends and which can expand and contract between the pair thereof, in which one of the pair is supported by the base;

a second displacement part which has a pair of ends and which can expand and contract between the pair thereof, in which one of the pair is supported by the base;

a resultant part which connects the other of the pair of the first displacement part and the other of the pair of the second displacement part to each other, in which the resultant part has a contact part that contacts a body to be driven by the contact part; and

a driver, the driver supplying at least one of the first displacement part and the second displacement part with a driving signal so that a first phase of vibration of the first displacement part is in one of a first state in which the first phase thereof is faster than a second phase of vibration of the second displacement part and of a second state in which the first phase thereof is slower than the second phase thereof, wherein

the contact part can elastically deform in a direction in which the body is driven by the contact part.

19. (New) The driving mechanism as claimed in claim 18, wherein the first driving signal and the second driving signal have frequencies which belong to a region of ultrasonic.

20. (New) The driving mechanism as claimed in claim 18, wherein the first displacement part, the second displacement part, the resultant part, and the contact part are provided generally symmetrically with respect to an axis which is generally perpendicular to the direction in which the body is driven, and

wherein the body can be driven forward and backward by the contact part.

21. (New) The driving mechanism as claimed in claim 18, wherein driving force which the contact part exerts upon the body is equal to or smaller than frictional resistance which is gained by multiplying normal resistance which the contact part exerts upon the body, by frictional coefficient between the contact part and the body.

22. (New) An ultrasonic driving mechanism comprising:

an object to be driven;

at least one pair of electrical-mechanical energy transducers which vibrate with predetermined different phrases to cause a resultant elliptical vibration, in which the electrical-mechanical energy transducers are provided generally symmetrically with respect to an axis that is generally perpendicular to a direction in which the object is driven;

an elastically deformable part which is provided generally symmetrically with respect to the axis, in which the resultant elliptical vibration is transmitted to the object via the elastically deformable part; and

a driver supplying at least one of the first displacement part and the second displacement part with a driving signal so that a first phase of vibration of the first displacement part is one of a first state in which the first phase thereof is faster than a second phase of vibration of the second displacement part and of a second state in which the first phase thereof is slower than the second phase thereof, wherein

the object can be driven forward and backward by the elastically deformable part.

REMARKS

In response to the Office Action dated March 12, 2002, claims 1, 4, and 14 are amended, claims 5 and 8-13 are canceled, and claims 15-22 are added. Claims 1-4, 6, 7 and 12-22 are now active in this application. No new matter has been added.

The indication that claims 4 and 5 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims is acknowledged and appreciated.

REJECTION OF CLAIMS UNDER 35 U.S.C. § 102

I. Claims 1-3, 6-10 and 14 stand rejected under 35 U.S.C. §102(a) as being anticipated by Reuter, Tojo, Matsuda or Japan (477).

The rejection is moot as to cancelled claims 8-10 and is respectfully traversed as to claim 7.

Anticipation, under 35 U.S.C. § 102, requires that each element of the claim in issue be found, either expressly described or under principles of inherency, in a single prior art reference. ***Kalman v. Kimberly-Clark Corp.***, 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983).

Claim 7 recites the subject matter describe at page 19, lines 7-25 of the specification, with particular reference to the equation $Ff = \mu \times N$ and the driving force Fd applied to the to driven body by the contact part. As described on page 4 of the specification, an objective of the present invention is to have a driving part of an ultrasonic driving mechanism that is prevented from slipping on an object, or body to be

driven. When Fd ≤ Ef (the frictional resistance force that the surface of the driven body exerts on the contact part), there will be no slipping and this is what is stated in these claims. The Examiner has identified no portion of the applied prior art reference that discloses that the contact part of the ultrasonic driving mechanism is prevented from slipping on the driven body since Fd ≤ Ef. Consequently, the Examiner has not established that that each element of claim 7 is found in each of the applied prior art references, either expressly described or under principles of inherency.

At any rate, to expedite prosecution, claim 1 is amended to delineate that "material and configuration of the base, of the first displacement part, of the second displacement part, and of the resultant part are selected so that resonant frequency of the elastic projecting part in the direction in which the body is driven is generally equal to resonant frequency of the first displacement part and the second displacement part in a direction perpendicular to the direction in which the body is driven". This subject matter is recited in claim 5, now canceled. In addition, claim 14 is amended to include similar subject matter as in claim 5, but modified in view of the different limitations recited in claim 14.

Consequently, amended independent claims 1 and 14 are believed to be allowable for the same reasons as to why claim 5 is allowable. Dependent claims 2, 3 6 and 9 are believed to be allowable also.

Furthermore, claim 4, indicated as allowable, is amended to be in independent form including all the limitations of base claim 1. Consequently, amended claim 4 is believed to be allowable also.

II. Claim 11 stands rejected under 35 U.S.C. §102(a) as being anticipated by Vishneosky (580), Vishnevsky (103) or Esemann.

Applicants note that claims 12 and 13, depending from claim 11, are not rejected. However, the rejection is moot as to canceled claims 11-13.

NEW CLAIMS

New claims 15-22 are submitted. Claims 15-17 depend from claim 4 and correspond to original claims 3, 6 and 7, respectively. Consequently, claims 15-17 are believed to be allowable as claim 4 depends from amended claim 1.

New independent claim 18 is based upon original claim 1 and new independent claim 22 is based on original claim 14, both including the addition of:

> a driver, the driver supplying at least one of the first displacement part and the second displacement part with a driving signal so that a first phase of vibration of the first displacement part is in one of a first state in which the first phase thereof is faster than a second phase of vibration of the second displacement part and of a second state in which the first phase thereof is slower than the second phase thereof...

New claims 19-21 depend from new claim 18 and correspond to original claims 3, 6 and 9, respectively.

The term "vibration" used in claims 18 and 22 is supported in the description of the original specification at, for example, the 4th and 6th lines of page 6. The difference between new claim 18 and amended claim 4 is as follows. Namely, new claim 18 defines a phase of vibration while, on the other hand, amended 4 defines a phase of signal. Also, new claim 18 defines that the driving signal is supplied to at least one of the first displacement part and the second displacement part. On the other hand, amended claim 4